TRICOUNTY HEALTH DEPARTMENT

RULES FOR HAULING DRINKING WATER

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Contents

Appendices

1. Purpose
    1.1. The purpose of this regulation is not to promote the hauling of drinking water but to protect and promote public health, and prevent disease with respect to the hauling of drinking water within Duchesne, Uintah, and Daggett Counties, with the intent to clarify the application, inspection, permitting, and approval process.

2. Scope
    2.1. This regulation is applicable within all incorporated and unincorporated areas of Duchesne, Uintah, and Daggett Counties. This regulation applies to any Public Water System, Non-public Water System, commercial business, or third-party individual that delivers bulk drinking water to any commercial facility or private residence. This regulation does not apply to a private individual hauling water to their personal residence.
    2.2. Water hauling involves collecting drinking water in a portable tank or vessel from an approved Public Water System and delivering it directly to the public.
    2.3. Each step in the water hauling process has the potential to introduce contaminants to the drinking water, which could make it unfit for human consumption. This regulation is intended to limit the potential for water contamination during water hauling.

3. Authority
    3.1. This regulation is adopted under the authority of the TriCounty Board of Health in accordance with Utah Code Annotated Section 26-1-5, 26-1-30, and 26-15-2.

4. Definitions
    4.1. For the purpose of these rules, and unless defined in other sections, the terms, phrases, and words shall have the following meanings:
        4.1.1. Commercial water hauler:
        4.1.2. Public water system:
        4.1.3. Non-public water system:

5. Permits
    5.1. Permit Required

        5.1.1. No person shall sell or offer to sell water or convey water for sale for domestic purposes without a current, valid permit from the Department.

5.1.1.1. No water for sale for domestic purposes shall be transported or conveyed in any vehicle unless the tanks, other receptacles and equipment are maintained in sanitary condition and in good repair to the satisfaction of the Department.

5.2. Application

5.2.1. Prior to initiating a water hauling operation, the hauler shall submit a complete application to TriCounty Health Department (the Department). The application shall include:

A. Name, address, and telephone number of the applicant. If the applicant is a partnership, the names and addresses of the partners; and if a corporation, the name and address of the corporation.

B. Name and address of the places of business if different from above.

C. The applicant shall state the number of hauling vehicles to be used, description of vehicles or skids (make, model, year, VIN, and license number), tank capacity, and any other related information required by the Department.

D. A list of all approved drinking water shall be provided that are used for hauling water. Applicants must provide proof of contract/availability to obtain water from each approved Public Water System.

5.3. Inspection

5.3.1. The Department shall inspect the business location, equipment, and any documentation required.

5.3.2. If the water hauling operation is compliant, it will be issued an operating permit.

5.3.3. Each vehicle or skid shall be inspected to see that it is in compliance with this rule.

5.3.4. If the vehicle or skid is compliant, it will be issued a decal from the Department.

5.4. Expiration

5.4.1. A water hauling operation permit and equipment decals are valid for one year. All water hauling permits and decals expire April 1.

5.5. Renewal

5.5.1. The owner or agent of the water hauling operation must ensure that the file information at the Department is complete and accurate, applicable fees are paid, and inspections of the business and equipment are scheduled prior to expiration of the permits.

5.6. Signage

5.6.1. Water hauling operation vehicles or skids must be labeled with the words “POTABLE WATER” or “DRINKING WATER” in a manner that is readily

identifiable to the public and emergency personnel.

5.6.2. The capacity of the tank in U.S. gallons shall be determined accurately by calculation, metering, or as specified by the manufacturer, and shall be plainly, legibly, and permanently marked or stamped on the exterior of the tank.

5.7. Records

5.7.1. The water hauling operation shall submit summary data of their business activity to the Department upon request. Summary data must be retained for at least 5 years. Summary data information shall include:

5.7.1.1. Approved water system utilized for the source of water.

5.7.1.2. Date, time, location, and free chlorine residual of each water fill.

5.7.1.3. Date, time, location, and free chlorine residual of each water delivery.

5.7.1.4. Notes regarding the receiving tank and any other significant items regarding the water supply or water hauling equipment.

5.7.1.5. Routine equipment maintenance work performed on water tank, hoses, nozzles, valves, pumps, bacteriological samples, etc.

5.8. Revocation

6. Source Water Supply to be Hauled

6.1. The source providing water must be from a Public Water System rated as approved by the Division of Drinking Water. The System must be in compliance with drinking water Maximum Contaminant Levels and monitoring requirements.

7. Water Hauling Equipment

7.1. All equipment, including tanks, gaskets, hoses, fittings, pumps, etc., that may come into contact with the hauled water should be comparable to equipment meeting the standards of NSF/ANSI 61 - *Drinking Water System Components – Health Effects*. Prior to selecting used equipment for water hauling, the hauler must determine how the equipment was used; if the previous use of the equipment is unknown, it may not be used to haul water. Preferably, the equipment should have been previously used solely to transport, store, or pump drinking water.

7.1.1. Tanks or Vessels

7.1.1.1. Water hauling must be accomplished with tanks or vessels dedicated solely to drinking water. The tank must be constructed of a material suitable for holding drinking water and be comparable to equipment meeting NSF/ANSI 61. A tank used to haul drinking water must be watertight, in good condition, easy to clean, and have no interior features that can hold dirt or residue. It must have a drain or an outlet valve and be

constructed to drain completely. If vented, the vent must be downturned and covered with No. 14, or finer, stainless-steel mesh screen. Tank openings, including hatches, must extend above the exterior tank surface and be sealed with watertight, food-grade gaskets with overlapping covers. The covers on tank openings should have security locks, which are locked when not in use. The covers should be secured to the tank with chains, cables, or hinges.

7.1.2. Hoses

7.1.2.1. Hoses used to load and unload hauled water should be comparable to equipment meeting NSF/ANSI 61 standards and be made of materials that impart no taste or odor to the water. Hoses should be kept off the ground at all times. They should have end-caps or be stored in an enclosure for protection from contamination when not in use or during transportation. Hose end-caps should be secured with chains or cables. Garden hoses, rubber hoses, canvas fire hoses, and hoses previously used for non-drinking water should not be used.

7.1.3. Pumps

7.1.3.1. Pumps used to transfer hauled water must be new or have been previously used only to pump drinking water. Pump lubricants must meet NSF/ANSI 60 standards. Pumps previously used to pump food-grade liquids may only be used with the Director's approval and after rigorous cleaning, disinfection and testing.

8. Cleaning Water Hauling Equipment Prior to Disinfection

8.1. Dirt or debris in the water hauling equipment can interfere with disinfection. Heavy particles may contain bacteria that even concentrated chlorine may not be able to contact and kill. Therefore, equipment must be clean before final disinfection by chlorination. Water hauling equipment that is new; shows evidence of dust, dirt, debris, or other foreign matter; or has been previously used to transport, store, or pump food-grade liquids must be thoroughly cleaned prior to being disinfected as described below.

8.2. All Water Hauling equipment must be cleaned according to Appendix A

9. Disinfection of Water Hauling Equipment

9.1. The interior surfaces of tanks and equipment must be disinfected with chlorine according to one of the methods described below prior to coming into contact with the drinking water that will be collected, transported, and delivered during the water hauling process. The following disinfection procedure applies to all water hauling

equipment, including equipment that requires preliminary cleaning according to the above procedure and equipment regularly used to haul water.

9.2. All equipment must be disinfected according to Appendix B prior to it being put into service.

9.3. Emergency Disinfection

9.3.1. A written procedure for emergency disinfection of equipment following a contamination incident (i.e.hose falling to the ground) must be kept in each vehicle.

10. Water Hauling Procedure

10.1. After completing cleaning and disinfection, the equipment is ready for water hauling. Care must be taken not to contaminate the water or disinfected equipment during collection, loading, transport, and unloading. All equipment openings must be closed when not in use. The drinking water must be tested for coliform bacteria when it is first loaded into the water hauling tank and periodically during water hauling (See Section12.4). Each batch of water must also be tested for free chlorine residual when loading and unloading. Follow Appendix C for loading and unloading procedures.

11. Water Hauling Frequency – When to Repeat Cleaning and Disinfection

11.1. The water hauling equipment does not have to be re-cleaned and re-disinfected after the initial delivery provided that the above procedures were followed and the equipment is used regularly to deliver hauled water. Simply follow the water hauling procedures to maintain the sanitary condition of the equipment and test each load to assure the presence of a free chlorine residual as specified above.

11.2. If water hauling is done intermittently and the equipment is sealed to prevent contamination, water delivery may resume after rinsing the equipment with chlorinated drinking water. If the equipment has been open to the atmosphere or shows evidence of dust, dirt, debris, or foreign matter, it must be cleaned and disinfected according to the above procedures.

11.3. If water hauling ceases for a period of 30 days or more, the tank and all other equipment shall be re-cleaned and re-disinfected prior to the vehicle/tank being put back into service.

11.4. If the hauled water tests positive for coliform bacteria at any time during the period in which water is being hauled, the water must be discarded and the tank flushed and disinfected according to the above procedures.

11.5. If the equipment is used to load, store, or transport food-grade liquids after being cleaned and disinfected for water hauling, a new proposal for water hauling must be prepared and submitted to the Director and all of the above procedures completed once again.

12. Bacteriological and Free Chlorine Residual Monitoring and Reporting

12.1. After disinfecting the water hauling equipment and filling the tank with the first load of drinking water supplied by an approved source, the water must be sampled for total coliform bacteria. The samples must be analyzed by a laboratory certified by the State of Utah to perform total coliform testing. The date, time, and name of the person collecting the sample should be recorded (use the *Water Hauling Checklist* in Appendix E). Copies of the record of coliform sampling and the laboratory analysis results must be maintained by the hauler and made available to the Department upon request.

12.2. If coliform bacteria are absent, the water may be delivered and regular water hauling may proceed. If coliform bacteria are present, the water must be discarded and the tank disinfected again using the above procedures. Any consumer that received water that tested positive for coliform bacteria must be notified as soon as possible by the water hauler. The water hauler must also notify the Public Water System where the water was obtained. If multiple positive coliform bacteria samples continue to be found after repeated disinfection of the tank, the tank may not be used to haul water and a new tank must be found.

12.3. The water must be tested for coliform bacteria periodically during the period of water hauling. When hauling water daily, coliform samples should be collected and analyzed monthly. If water is hauled intermittently, coliform samples must be collected from the first load each time water hauling resumes. If coliform bacteria are detected, the water must be discarded and the water hauling equipment must be disinfected according to the above procedure before water hauling may resume.

12.4. The free chlorine residual must be measured twice for every load of water hauled. The free chlorine residual in the tank must be measured when the same batch of water is loaded and unloaded. The measured free chlorine residual must be recorded, and records must be maintained by the hauler and made available to the Department upon request (use the *Water Hauling Checklist* in Appendix E). If a free chlorine residual is not detected at the time of delivery, the water must be discarded.

13. Enforcement

13.1 The Department may initiate legal action, civil or criminal, to abate any condition that exists in violation of these rules and regulations.

13.2. Any person, association, or corporation, and the officers of the association, or corporation, who is in violation of these rules and regulations either by failing to do those acts required herein or by doing a prohibited act, is guilty of a class B misdemeanor pursuant to Section 26A-1-123, Utah Code Annotated, 1953, as amended. If a person is found guilty of a subsequent similar violation within two years he is guilty of a class A misdemeanor pursuant to Section 26A-1-123, Utah Code Annotated, 1953, as amended.

13.3. In addition to other penalties imposed, any person found guilty of violating any of these rules and regulations shall be liable for all expenses incurred by the Department in removing or abating any nuisance, source of filth, cause of sickness or infection, health hazard, or sanitation violation.

Appendix A: Cleaning Equipment

Cleaning Water Hauling Tanks

Prior to cleaning, drain the tank of residual liquid. Clean the tank interior with a mixture of detergent and drinking water using a clean brush or high-pressure water jet if necessary. Warm or hot water may be used if available. No solvents or toxic cleaners may be used. Properly dispose of the water and detergent mixture as it drains from the tank.

When the tank is clean, rinse it using clean drinking water until the water draining from the tank is detergent-free. A high-pressure water jet may be used. Drain the water from the tank and properly dispose of the drained water. The tank is now ready to be disinfected according to the procedure below.

Cleaning Hoses and Pumps

The interior surfaces of hoses, pumps, and other equipment that will come into contact with the hauled water must be cleaned of dirt, debris, or residue. Prepare a mixture of detergent and drinking water, flush the hoses and pumps with the mixture, and then rinse the equipment with clean, drinking water until the water runs detergent-free. The hoses and pumps are now ready to be disinfected according to the procedure below.

Appendix B: Disinfection

- Using Chlorine as a Disinfectant
    - A chlorine solution must be used to disinfect interior surfaces of the water hauling equipment, including tanks, hoses, pumps, etc. Trained Public Water System personnel may use any of the forms of chlorine described in ANSI/AWWA C652-11 to prepare the required chlorine solutions for disinfection.
      Small-scale water hauling operations that choose to prepare chlorine solutions for disinfection must use a liquid hypochlorite solution that is certified to meet NSF/ANSI 60. Commercially manufactured sodium hypochlorite is available from water treatment equipment suppliers. Regular liquid bleach, which contains sodium hypochlorite, may only be used if it carries the NSF/ANSI 60 certification. Typical household liquid bleaches that lack NSF/ANSI 60 certification may not be used as a disinfectant for drinking water or water hauling equipment.
    - Liquid sodium hypochlorite comes in various strengths ranging from approximately 5% to 15% available chlorine. The strength and age of the sodium hypochlorite must be taken into consideration when preparing the solution to be used for disinfection. Tables in Appendix C show how to make different concentrations of chlorine disinfectant by adding liquid sodium hypochlorite to treated drinking water. Because liquid sodium hypochlorite loses 2 to 4 percent of its available chlorine content per month when stored at room temperature, the maximum recommended shelf life is 60 to 90 days.
      Sodium hypochlorite is corrosive and should be handled with care. Protective equipment, such as goggles and rubber gloves and aprons, should be worn when handling sodium hypochlorite solutions.
- Disinfection of Water Hauling Tanks
    - Tanks can be disinfected by one of the following methods:
        - Method 1: To disinfect a tank by full contact, fill the tank with drinking water containing sufficient chlorine that will provide a free chlorine residual of 50 mg/L. Seal the tank and let it stand undisturbed for 6 hours. If using liquid sodium hypochlorite to disinfect a tank by *Method 1*, determine the volume of water needed to fill the tank. Calculate the amount of liquid sodium hypochlorite needed to be added to that volume of water to provide a free chlorine residual of at least 50 mg/L (see tables in Appendix C). Begin filling the tank with water while gradually adding the liquid sodium hypochlorite. To achieve adequate mixing, add the bleach and water proportionally to maintain a uniform chlorine

concentration while filling the tank. Seal the tank when full, and let it stand undisturbed for 6 hours.

- Method 2: To disinfect a tank by spraying or painting, prepare a 200 mg/L solution of chlorinated water, spray or paint the interior tank surface with the solution making sure to wet the entire surface. Continue to re-wet the surface as necessary to keep it in contact with the solution for a minimum of 30 minutes.

  If using liquid sodium hypochlorite to disinfect a tank by *Method 2*, determine the volume of water needed to spray or paint the interior tank surface and keep it wet by re-application. Calculate the amount of liquid sodium hypochlorite needed to be added to that volume of water to provide an available chlorine concentration of at least 200 mg/L (see tables in Appendix C). Mix the water and chlorine together in a clean make-up tank and apply it by spraying or painting the interior tank surface as necessary to keep it wetted for a minimum of 30 minutes. (Avoid breathing the mist.)

- After the minimum chlorine contact time has been met, using one of the above disinfection methods, drain the chlorine solution from the tank and dispose of it properly. Thoroughly rinse the tank with drinking water, drain, and properly dispose of the rinse water. The tank is now ready to be filled with drinking water. CAUTION: Do not discharge highly chlorinated water on to the ground or to surface water (such as a stream, pond, lake, or wetlands) where it can kill aquatic life, wildlife, and vegetation. Contact the Utah Division of Water Quality to determine if the water may be discharged and what treatment is required. The chlorine solution may be discharged to a sanitary sewer only after obtaining permission from the sewer system owner.

- Disinfection of Hoses and Pumps
  - The interior surfaces of hoses and pumps that will come into contact with the treated drinking water must also be disinfected prior to use.
  - Hoses may be disinfected by full contact with a concentrated chlorine solution. If using liquid sodium hypochlorite, calculate the amount needed to be added to a sufficient volume of water to fill the hoses and to achieve a free residual chlorine of 50 mg/L (see tables in Appendix C). After capping one end, fill the hose with the chlorinated water, cap the open end, and let the hose stand undisturbed for 6 hours. At the end of the 6-hour contact time, drain the chlorine solution, flush with clean water, drain, and cap the hose to prevent contamination.
  - A stand-alone pump can be disinfected along with the hoses by filling them with water containing an available chlorine concentration of 50 mg/L and letting them stand undisturbed for 6 hours. At the end of the 6-hour contact time, drain the

chlorine solution, flush with clean water, drain, and cap the hoses and pump to prevent contamination.

- For tanks equipped with pumps, the hoses and pumps may be disinfected simultaneously with the tank by circulating water containing an available chlorine concentration of 50 mg/L drawn by the pump from the tank and returned through the hoses. After setting up a closed loop, recirculate the chlorinated water for one hour, let the tank, hoses, and pump stand undisturbed for another 5 hours (total contact time is 6 hours). Flush the hoses, pump, and tank with clean water, drain, and cap them to prevent contamination.
- Spraying or painting with a highly concentrated chlorine solution may be inappropriate for disinfecting hoses and pumps. Pump materials may not be suitable for prolonged exposure to chlorine and sodium hypochlorite.

Appendix C: Loading and Unloading Water

- Loading the Water
    - Fill the disinfected tank with treated drinking water from an approved Public Water System. The tank must be filled in a manner that prevents the backflow of water from the hauling tank to the water source. This may be accomplished by employing a double check assembly when a direct connection from the water source to the tank is used or by maintaining an air gap (see Appendix D) between the hose drawing water from the source and the tank receiving the water. Hoses must be kept off the ground during filling to avoid contamination of the hauling tank. When filling a tank using an air gap, care should be taken to prevent wind-borne contaminants from entering the tank.
    - To keep the water safe for drinking, during transportation it should have a minimum free chlorine residual of 1 mg/L, but no greater than 4 mg/L, when loaded (see tables in Appendix C). Measure and record the free chlorine residual of the water in the tank prior to closing the filling port. If the concentration is less than 1 mg/L, add chlorine to the tank in the proper proportion to achieve the required concentration. Close the port through which the tank was filled and properly store the hoses.
- Transporting the Water
    - After loading the water hauling tank, the water should be delivered without delay. The chlorine concentration of the water in the tank will decline over time. Water held in a water hauling tank must be discarded if a free chlorine residual is not detected at the time of unloading. If a rapid decline in free chlorine residual occurs during transportation, additional chlorine should be added to provide a free chlorine residual of 1 mg/L but no greater than 4 mg/L.
- Unloading the Water
    - Before delivering the hauled water, the water storage tank and distribution system that will receive the water must have remained free of contamination while they have stood unused.
    - When unloading the water, hoses should be kept off the ground and not be submerged in the tank receiving the water. After unloading the water, the ports of both tanks should be closed to protect them from contamination and the hoses capped and properly stored.

Appendix D: Brief Summary of Water Hauling Steps

Brief Summary of Water Hauling Steps

1. Submit a Water Hauling Proposal
   Notify the Director of the Division of Drinking Water of the need to haul water. Complete the Water Hauling Proposal form found in Appendix B and submit it for review.

2. Select the Equipment
   The preferred method of selecting equipment is to find a commercial water hauler or Public Water System with the experience and equipment to safely deliver drinking water during an emergency. Alternately, choose equipment that has been used exclusively for drinking water, or purchase new equipment comparable to equipment certified to meet NSF/ANSI 61.

3. Clean the Equipment
   If the equipment is new or shows evidence of dust, dirt, debris, or foreign matter, clean the tank, hoses, and pump with a solution of clean water and detergent. Drain the wash water and rinse with clean water until it runs clear of detergent. Drain the rinse water from the equipment and close all openings to protect the equipment from contamination.

4. Disinfect the Equipment
   Use one of the following methods to disinfect the tank:

   Method 1: To disinfect a tank by full contact, fill the tank with drinking water containing sufficient chlorine that will provide a free chlorine residual of 50 mg/L. Seal the tank and let it stand undisturbed for 6 hours.

   Method 2: Prepare a 200 mg/L solution of chlorinated water and spray or paint the entire interior tank surface with the solution. Continue to re-wet the surface as necessary to keep it in contact with the solution for a minimum of 30 minutes. Drain the tank and properly dispose of the chlorinated water.

   Disinfect the hoses and pump by filling them with water containing an available chlorine concentration of 50 mg/L and let them stand undisturbed for 6 hours. At the end of the 6-hour contact time, drain the chlorine solution, flush with clean water, drain, and cap the hoses and pump to prevent contamination.

5. Fill the Tank
   Fill the water hauling tank through a water filling station or using clean disinfected hoses with drinking water from an approved Public Water System. Add chlorine to provide a free chlorine residual of 1 mg/L. Collect a water sample in a bottle supplied by an approved drinking water laboratory. Send the sample to the lab to test for total coliform bacteria.

6. Deliver the Water
   Before delivering the first load of water, confirm that it is free of coliform bacteria based on sample results from a certified laboratory. At the water delivery point, test the water to confirm a minimum free chlorine residual of 1 mg/L. Transfer the water from the water hauling tank to the Public Water System or private water tank receiving the water. Keep hoses off the ground. Do not submerge the hose in the water in the tank receiving it. After unloading, close the ports of both tanks. Cap and properly store the hoses.

7. Document Water Hauling Process

Appendix E: Water Hauling Application

Use the *Water Hauling Checklist* in Appendix E to document the water hauling process.
Water Hauling Proposal

Provide the following information and submit the completed form to the Director, Utah Division of Drinking Water, or call the DDW Engineering Section at (801) 536-4200 with questions.

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1. Name of Public Water System (PWS) Hauling Water:

   ID Number of PWS Hauling Water:

2. Describe the Emergency or Reason for Requesting the Use of Hauled Water:

3. Identify How the Hauled Water Will Be Used (drinking, showering, cooking, food-washing, etc.):

4. Name of Approved PWS Supplying Hauled Water:

   ID Number of Approved PWS Supplying Hauled Water:

   Name of the Water Source and Source ID Providing the Water (if applicable):

Describe Specific Location and Particular Component of the PWS that Will Supply the Water (i.e., water storage tank, water filling station, water supply well, hydrant, etc.):

5. Name and Contact Information for the Company or Individual Hauling the Water (if applicable):

6. Describe Tanks, Vehicles, and Equipment Transporting Hauled Water:

7. Quantity of Water to Be Hauled (each time) in Gallons:

8. Frequency at which Water Will Be Hauled (twice daily, daily, twice weekly, etc.):

9. Anticipated Start and End Dates for Water Hauling:

10. Type of Disinfectant to Be Used (must meet ANSI/NSF Standard 60):

11. Frequency and Method of Cleaning Water Hauling Equipment:

12. Frequency and Method of Disinfecting Water Hauling Equipment:

13. Frequency and Method of Chlorine Residual Monitoring of Hauled Water:

14. Frequency of Bacteriological Sampling of Hauled Water:

15. Date, Name, and Contact Information of Local Authority Concurring with Water Hauling Request:

Name and Title: Date:

Signature: Phone Number/email:

Appendix F: Mixing Chlorine Solutions Using Liquid Sodium Hypochlorite (5.25% & 12.5%)

5.25% Liquid Sodium Hypochlorite (NSF/ANSI 60 certified)

Desired Chlorine Concentration:	Amount of 5.25% Liquid Sodium Hypochlorite:	Amount of Drinking Water:
1 mg/L*	1 ½ tsp**	100 gallons
1 mg/L	⅓ cup	1,000 gallons
1 mg/L	1 ½ cups	5,000 gallons

Desired Chlorine Concentration:	Amount of 5.25% Liquid Sodium Hypochlorite:	Amount of Drinking Water:
50 mg/L	1 ½ cups	100 gallons
50 mg/L	1 gallon	1,000 gallons
50 mg/L	5 gallons	5,000 gallons

Desired Chlorine Concentration:	Amount of 5.25% Liquid Sodium Hypochlorite:	Amount of Drinking Water:
200 mg/L	6 cups (1 ½ quarts)	100 gallons
200 mg/L	4 gallons	1,000 gallons
200 mg/L	20 gallons	5,000 gallons

12.5% Liquid Sodium Hypochlorite (NSF/ANSI 60 certified)

Desired Chlorine Concentration:	Amount of 12.5% Liquid Sodium Hypochlorite:	Amount of Drinking Water:
1 mg/L	⅜ tsp	100 gallons
1 mg/L	6 tsp	1,000 gallons
1 mg/L	⅜ cups	5,000 gallons

Desired Chlorine Concentration:	Amount of 12.5% Liquid Sodium Hypochlorite:	Amount of Drinking Water:
50 mg/L	⅜ cups	100 gallons
50 mg/L	6 ⅜ cups	1,000 gallons
50 mg/L	2 gallons	5,000 gallons

Desired Chlorine Concentration:	Amount of 12.5% Liquid Sodium Hypochlorite:	Amount of Drinking Water:
200 mg/L	2 ½ cups	100 gallons
200 mg/L	1 ⅜ gallons	1,000 gallons
200 mg/L	8 gallons	5,000 gallons

*1 mg/L (milligram per liter) = 1 ppm (part per million)
**tsp - teaspoon

Appendix G: Providing an Air Gap

Note: A chlorine dose calculator is available on the Division of Drinking Water website.

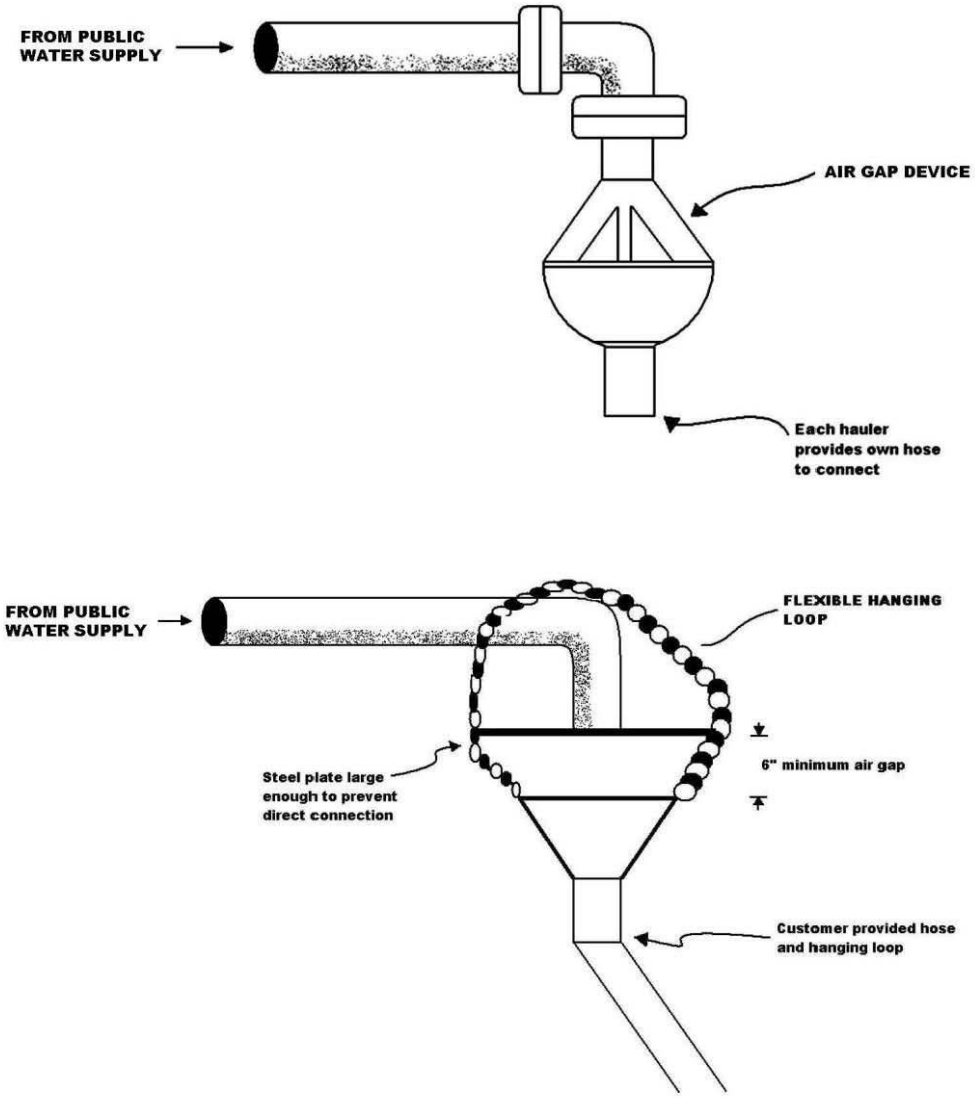

Figure 1. Suggested Methods of Providing Air Gap.

(Reproduced From 2012 Edition of "Recommended Standards for Water Works")

Appendix H: Water Hauling Checklist

Utah Division of Drinking Water - Water Hauling Checklist									
WATER SYSTEM NAME (WATER SYSTEM ID UTAH #XXXXX)									
Source of Hauled Water: WATER SYSTEM NAME (UTAH #XXXXX) or WATER SOURCE NAME (WS00X) or Address/Description									
Utah DDW Water Hauling Approval Date ____ /____/_____									
(If applicable) XXXXXX Health Department Water Hauling Approval Date _____/_____/_____									
Date									
Water Operator Certification No.									
Operator Signature (or initials)									
Tanker or vessel volume (gallons)									
Hauled water volume (gallons)									
Disinfectant meeting ANSI/NSF 60 standard?									
Chlorine residual > 1ppm & < 4ppm during loading?									
Chlorine res. > 1ppm & < 4ppm during unloading?									
Equipment (tanker/vessel, hoses, pumps, etc.) inspected for cleanliness or disinfected?									
Hoses protected from contaminant & hose ends not contacting the ground?									
Cap the inlets, outlets & hose ends when not in use?									
Tanker/vessel access port watertight and locked?									
Tanker/vessel lid gasket watertight?									
Tanker/vessel lid secure before moving?									
Bacteriological sampling (if applicable)	Bacteriological sample collected?								
	Sample Type (e.g., initial, weekly, monthly, after non-use period, etc.)?								
	Satisfactory bacteriological result?								
Tanker/vessel disinfection (if applicable)	Target chlorine level (in ppm)								
	Contact time (in minutes)								
	Proper discharge of chlorinated water?								
	Thoroughly rinse the vessel?								

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